

# Monkeypox Multi-Country Outbreak

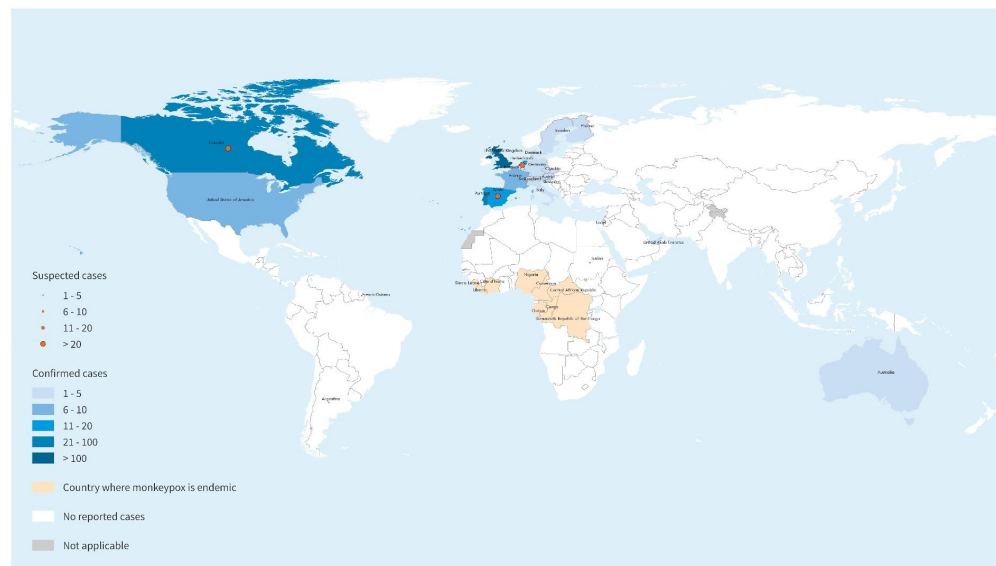
## *Update for Virginia Hospitals*

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June 2, 2022

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# Current Situation: Non-endemic Countries

- Cases identified in 23 countries not endemic for monkeypox virus, across 4 WHO regions (as of 5/29/22)
  - Between 5/13/22 and 5/26/22, 377 confirmed or suspect cases reported to WHO; no deaths
  - Majority have no established travel links to endemic countries



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Data Source: World Health Organization  
Map Production: WHO Health Emergencies Programme  
Map Date: 29 May 2022

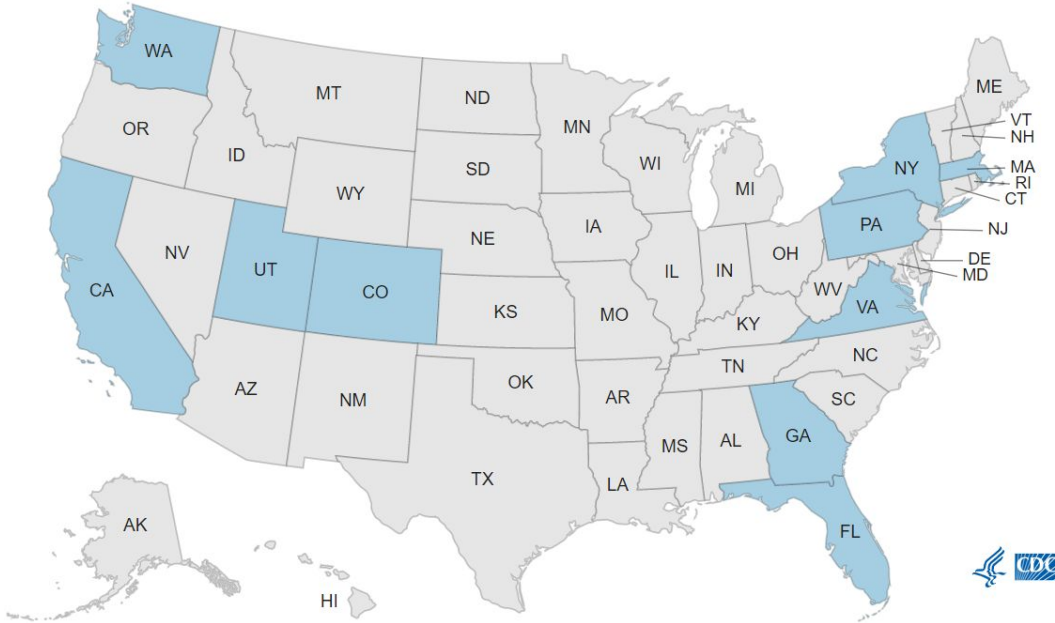
 **World Health Organization**  
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# Endemic Countries

Monkeypox is endemic in these central and west African countries: Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo (DRC), Gabon, Ghana (identified in animals only), Ivory Coast, Liberia, Nigeria, the Republic of the Congo, Sierra Leone, and South Sudan

Country	Time period	Cumulative cases	Cumulative deaths
Cameroon	15 December 2021 to 1 May 2022	25	9
Central African Republic	4 March to 17 May 2022	8	2
Democratic Republic of the Congo	1 January to 8 May 2022	1284	58
Nigeria	1 January 2022 to 30 April 2022	46	0
Republic of the Congo	21 May 2022 to 23 May 2022	2	0

# United States



As of 6/1/22, 19 cases have been reported in the United States, including one case in Virginia

# Virginia

- One confirmed case
  - Adult female resident of Northern Virginia
  - Travel history to west Africa
  - Did not require hospitalization
  - Close contacts have been identified and are monitoring for 21 days; 3 receiving PEP
- Additional Persons Under Investigation (PUI)

Number of Contacts by Risk Category	Risk Category*
1	High
6	Intermediate
22	Low/Uncertain
7	No Risk
36	TOTAL

\*Risk Categories are from [CDC | Poxvirus | Monkeypox | For Clinicians | Monitoring People Who Have Been Exposed](https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html)  
[www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html](https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html)

# WHO Risk Assessment

- General risk to the public is low
- Overall public health risk at global level = moderate
  - First time cases and clusters reported concurrently in wide disparate geographic areas and without known epidemiological links to endemic countries in West or Central Africa
  - Immediate action needed to avert establishment of monkeypox as a clinical condition in currently non-endemic countries



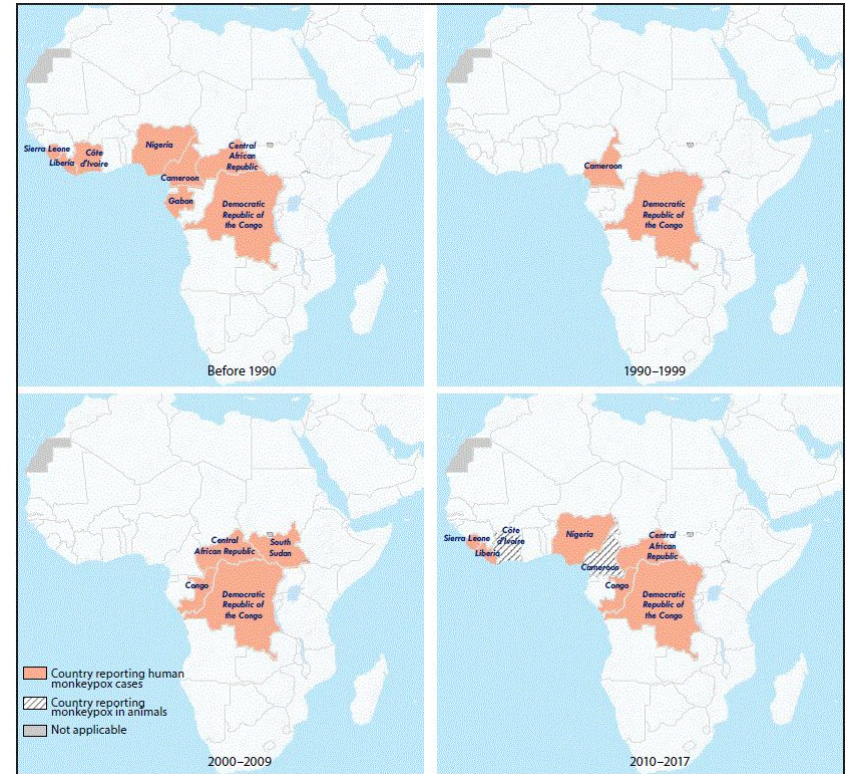
- Situation is rapidly evolving
- Healthcare providers should be alert for patients with signs and symptoms of monkeypox

# Monkeypox virus

- Orthopoxvirus genus
  - Genus includes variola virus (causes smallpox), vaccinia virus and cowpox virus
- Two clades of monkeypox virus
  - Central Africa clade (Congo Basin clade)
    - Causes more severe disease; Case Fatality Rate (CFR) up to 10%
    - Currently DRC reporting CFR among suspected cases around 3%
  - West Africa clade
    - Historically caused less severe disease; Case Fatality Rate 1%
    - Was thought to be less transmissible
    - Since 2017, deaths associated with young age or untreated HIV infection
- West Africa clade has been identified in current outbreak
  - Several European countries published genome sequences of monkeypox identified in current outbreak

# Monkeypox virus

- Uncertainty remains on the natural history of the monkeypox virus
  - African rodents and non-human primates are hosts
- Historically monkeypox disease has been rare
  - First human case in DRC in 1970
  - Sporadic exported cases outside of central and western African countries



Emergence of Monkeypox — West and Central Africa, 1970–2017

# Transmission

## Animal to Human

- Direct or indirect contact with body fluids or lesion material
- Bush meat preparation

## Human to Human

- Close contact with lesions, body fluids, respiratory droplets, contaminated materials
- Large respiratory droplet

Incubation Period: Average 6-13 days (range = 5-21 days)

Infectious Period: Symptom onset until skin lesions resolved

# Clinical Features

- Prodrome
  - Fever, chills, headache, myalgia, back pain, fatigue, lymphadenopathy
- Rash occurs 1-3 days after prodrome
  - Oral mucosal lesions
  - Cutaneous lesions progress through sequential stages - macules, papules, vesicles, pustules, scabs
- Illness is generally self-limited and lasts 2-4 weeks
- Atypical presentations noted among some cases in current outbreak
  - Relatively mild symptoms with localized rash (oral, perigenital and/or peri-anal distribution) and painful lymphadenopathy
  - No prodrome
- Differential diagnosis may include secondary syphilis, chancroid, herpes, chickenpox, varicella zoster

# Key Characteristics of Rash



- Well circumscribed, firm, deep-seated lesions that often develop umbilication
- Same stage of development on any one part of body (opposite of chickenpox)

# Patient History

- Obtain thorough travel history
- Ask about close contact (including sexual contact) with someone with rash
- Ask about animal exposure
  - Contact with a dead or live wild animal from or while traveling in an endemic country or using a product derived from such animals (e.g., game meat, creams, lotions, powders, etc.) or contact with an exotic pet (particularly rodents and non human primates)

# Testing

- Consult with local health department (LHD) for testing of suspected cases at Virginia's state public health lab (DCLS)
  - Approval required at this time
- Collect 2-4 dry (no VTM/UTM) swabs of lesions on different body areas
  - Sterile, nylon, polyester or Dacron swabs with a plastic, wood or thin aluminum shaft
  - 1-2 swabs will be tested at DCLS
  - 1-2 swabs forwarded for confirmatory testing at CDC
- Samples should be stored and transported refrigerated (on ice packs) using the routine DCLS courier

# Testing

- DCLS performs real-time PCR for non-variola orthopoxvirus and orthopoxvirus for the presumptive identification of monkeypox virus
  - Identifies the presence of orthopoxvirus
  - Rules out the presence of variola virus
- At this time, DCLS test results provided within 5-6 hours from start of test
  - Positive test
    - Presumed positive case
    - Send to CDC for confirmatory testing of monkeypox (turnaround time is 5-7 days for formal reporting of results)

# Treatment Options

- No specific treatment has been approved in the U.S. but below are treatment options that may prove beneficial
- Can be accessed through the federal government under an EA-IND protocol

Treatment Option	Indication	Formulations Available
<a href="#">Tecovirimat (TPOXX or ST-246)</a> *antiviral	FDA approved for the treatment of smallpox in adults and children >3 kg	Oral (200 mg capsule)* Injection for intravenous administration *ability to mix with semi-solid food for pediatrics < 13 kg
<a href="#">Cidofovir (Vistide)</a> *antiviral	FDA approved for treatment of cytomegalovirus retinitis in patients with AIDS	Intravenous infusion single-unit vial
<a href="#">Vaccinia Immune Globulin Intravenous (VIGIV)</a>	FDA licensed for treatment of complications due to vaccinia vaccination	Intravenous infusion single-dose vial

# Treatment Options

- CDC is **currently developing** an EA-IND to help facilitate use of brincidofovir as a treatment option for monkeypox
- However, brincidofovir is **not currently available from the Strategic National Stockpile (SNS)**

Treatment Option	Indication	Formulations Available
<a href="#">Brincidofovir (Tembexa)</a> *antiviral	FDA approved for the treatment of smallpox in adults and pediatrics, including neonates	Oral (100 mg tablet or 10 mg/mL suspension)

# Infection Prevention and Control

- Isolate patient in a single room with a dedicated bathroom
  - Limit patient transport; mask patient & cover lesions during transport
- Use standard and transmission-based precautions
  - PPE: gown, gloves, N95 respirator, eye protection
  - Any procedures likely to spread oral secretions should be performed in an airborne infection isolation room
- Avoid activities that may spread material from lesions

# Infection Prevention and Control

- Perform routine environmental cleaning & disinfection
  - Use an EPA-approved product labeled with [Emerging Viral Pathogens claims](#)
  - Avoid dry dusting, sweeping, or vacuuming
- Collect specimens following [CDC IPC guidance](#)
- Manage waste according to [U.S. Department of Transportation \(DOT\) Hazardous Materials Regulations](#) and [state and local regulations](#)

# Collaboration With Public Health

# Notify the Local Health Department



## HEALTH DEPARTMENT LOCATOR

Enter Your Address or  
Zip Code

Search radius

25 mi

Results 25

Search

### Richmond City Health Department

400 East Cary St.  
Richmond Virginia 23219

Phone: 804-205-3500

Fax: 804-371-2207

[Business Hours \(Call For Information\)](#) ▾

[Directions](#)

### Richmond City Health Department – WIC Community Hospital

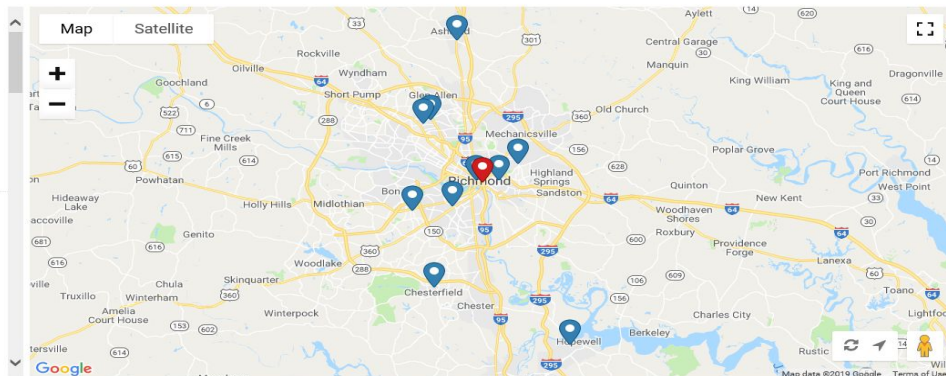
1510 North 28th St.  
Suite 208  
Richmond Virginia 23223

Phone: 804-786-3201

Fax: 804-225-7359

[Business Hours \(Call For Information\)](#) ▾

[Directions](#)



# Public Health Response to Control Outbreak

- Intensify surveillance
- Identify cases early
- Conduct laboratory investigation
- Implement infection control measures
- Isolate cases
- Conduct contact tracing and monitor contacts
- Provide guidance and education
- Conduct outreach to social networks of MSM and their contacts

# Current CDC Case Definitions for Epidemiologic Surveillance

**Possible Case:** Meets one of the epidemiologic criteria AND has fever or new rash AND at least one other sign or symptom with onset 21 days after last exposure meeting epidemiologic criteria

**Probable Case:** Meets one of the epidemiologic criteria AND has new rash *with or without* fever AND at least one other sign or symptom with onset 21 days after last exposure meeting epidemiologic criteria AND Demonstration of detectable levels of anti-orthopoxvirus IgM antibody during the period of 4 to 56 days after rash onset

**Confirmed Orthopoxvirus Case:** Meets possible case definition AND Demonstration of orthopoxvirus DNA by polymerase chain reaction testing of a clinical specimen OR demonstration of presence of orthopoxvirus using immunohistochemical or electron microscopy testing methods

**Confirmed Monkeypox Case:** Meets possible case definition AND Demonstration of presence of monkeypox virus DNA by polymerase chain reaction testing or Next-Generation sequencing of a clinical specimen OR isolation of monkeypox virus in culture from a clinical specimen

# Current Epidemiologic Criteria

Within 21 days of illness onset:

- Report having had contact with a person or people who have a similar appearing rash or received a diagnosis of confirmed or probable monkeypox OR
- Is a man who regularly has close or intimate in-person contact with other men, including men who meet partners through an online website, digital application (“app”), or social event (e.g., a bar or party) OR
- Traveled to a country with confirmed cases of monkeypox AND at least one of the above criteria OR
- Traveled to country where MPXV is endemic OR
- Contact with a dead or live wild animal or exotic pet that is an African endemic species or used a product derived such animals (e.g., game meat, creams, lotions, powders, etc.)

# Exclusion Criteria

A case may be excluded as a suspect, probable, or confirmed case if:

- An alternative diagnosis can fully explain the illness OR
- An individual with symptoms consistent with monkeypox does not develop a rash within 5 days of illness onset OR
- A case where high-quality specimens do not demonstrate the presence of *Orthopoxvirus* or *Monkeypox virus* or antibodies to orthopoxvirus

# Post Exposure Prophylaxis

- Two vaccines available: JYNNEOS and ACAM2000
- CDC recommends that vaccine be given within 4 days from the date of exposure to contacts identified to have had high-risk exposure
  - Consider for contacts with intermediate-risk exposure
  - If given between 4-14 days after the date of exposure, vaccination may reduce the symptoms of disease, but may not prevent the disease

# JYNNEOS

- Replication-deficient live vaccinia virus vaccine
- Licensed in the US in 2019 to prevent both smallpox and monkeypox
- Manufacturer: Bavarian Nordic A/S
- Administered by subcutaneous injection as a 2-dose series
- Recommended by CDC for people age 18 or older who are at high risk for monkeypox due to occupational exposure, or because they have been exposed to monkeypox virus



# ACAM2000

- Proper Name: Smallpox (Vaccinia) Vaccine, Live
- Manufacturer: Emergent Product Development Gaithersburg, Inc.
- Requires 1 dose
- Administered using a droplet by the percutaneous route (scarification) using 15 jabs of a bifurcated needle; verify evidence of 'take' at days 6-8
- Approved in 2007 for active immunization against smallpox disease for persons determined to be at high risk for smallpox infection

# Vaccine Risks & Contraindications

## JYNNEOS

- Newer vaccine, clinical trials have not indicated specific safety risks at this time
- Contraindications: Allergy to vaccine component

## ACAM2000

- Infection control measures required; contact with the vaccination site can result in auto-inoculation or infection to others
- Contraindications: Atopic dermatitis\*, other active exfoliative skin conditions\*, immunocompromised\*, pregnancy\*, age < 1 year\*, breastfeeding, known underlying heart condition,  $\geq 3$  known cardiac risk factors, allergy to vaccine component
  - \* Vaccinee or household contact

# Accessing Medications and Vaccines

- Providers should make requests for medications and vaccines through their local health department as part of the case investigation process
- At this time, all requests must be made by VDH in consultation with CDC
  - States are not currently permitted to pre-position/stockpile supplies from the federal government
- At this time, according to CDC, the U.S. has a sufficient supply of vaccine to respond to the current monkeypox outbreak

# Tools For Healthcare Facilities

# Preparedness Checklist for Healthcare Facilities

- ☐ Share situational awareness with all staff
- ☐ Ensure staff vaccination records are up-to-date and accessible
- ☐ Ensure availability of appropriate PPE and supplies
- ☐ Review infection prevention protocols for alignment with CDC guidance
- ☐ Review environmental cleaning procedures
- ☐ Provide education (e.g., rash identification) for HCP
- ☐ Review triage procedures to ensure timely identification and isolation of suspect cases
- ☐ Review specimen collection, transport, and testing procedures
- ☐ Review procedures for screening and monitoring of potentially exposed or ill staff
- ☐ Designate points of contact responsible for:
  - ☐ Communicating with the local health department (e.g., Infection Prevention)
  - ☐ Providing internal updates to HCPs and volunteers

# HCP Risk Assessment Tool

- Use to assess exposures and monitor contacts
- Exposure assessment
  - High, intermediate, low/uncertain, or no risk
- Healthcare facilities to monitor their own staff members
  - Consult with LHD for unusual exposure situations
  - Exposed HCP do not need to be excluded from work if they remain asymptomatic

State/Local ID:

Monkeypox  
VDH Guidance for Assessing and Managing Exposed Healthcare Personnel

Exposure risk assessment and public health recommendations for healthcare personnel exposed to a patient with monkeypox infection

**Background:** Transmission of monkeypox requires prolonged close interaction with a symptomatic individual. *Brief interactions and those conducted using appropriate personal protective equipment (PPE) in accordance with Standard Precautions are not high risk and generally do not warrant postexposure prophylaxis (PEP).*

**Purpose:** This tool is intended to assist with exposure assessment, monitoring, and PEP recommendations for healthcare personnel (HCP) with potential exposure to monkeypox in healthcare settings.

**How to Use the Tool:**

- Determine the degree of exposure using the *Healthcare Personnel (HCP) Exposure Risk Assessment to a Patient with Monkeypox*.
- Based on the degree of exposure, refer to the *Table of Recommendations by Exposure Risk* (pg. 4) for monitoring, post-exposure prophylaxis, and other public health recommendations.

Healthcare Personnel (HCP) Exposure Risk Assessment to a Patient with Monkeypox	
<b>Degree of Exposure: High</b>	
During the period of interest <sup>1</sup> , did you have any unprotected skin or mucous membrane contact to the patient's skin, lesions, or bodily fluids (e.g., inadvertent splashes of patient saliva to the eyes or oral cavity, ungloved contact with patient, penetrating sharps injury from used needle), or contaminated materials (e.g., linens, clothing)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
During the period of interest <sup>1</sup> , were you inside the patient's room or within 6 feet of a patient <i>during any procedures that may create aerosols</i> <sup>2</sup> from oral secretions, skin lesions, or resuspension of dried exudates (e.g., shaking of soiled linens) while you were not wearing a NIOSH-approved N95 or equivalent respirator (or higher) and eye protection?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes to any of the above, the degree of exposure is considered <b>High</b> and recommendations include: <ul style="list-style-type: none"><li>• Monitor for symptoms (refer to <a href="#">table</a> of recommendations by exposure risk below)</li><li>• PEP: recommended (refer to <a href="#">table</a> for details)</li></ul>	
If No to all of the above, proceed to assessing <i>Intermediate</i> degree of exposure risk below.	

# Take Home Messages

- Risk to general public is low
- Now is the time to ensure your healthcare facility is prepared
- When evaluating patients, have low index of suspicion for monkeypox if characteristic rash is present
- Consult and collaborate with your [Local Health District](#)
- Stay updated on latest information and recommendations regarding monkeypox via [CDC](#) and [VDH](#) websites

# Resources

- CDC Monkeypox [website](#)
  - [Case definition](#)
  - [Information for clinicians](#)
  - [Infection prevention](#)
  - [Preparation and collection of specimens](#)
- CDC Health Alert Network health advisory [5/20/2022](#)
- COCA call [5/24/2022](#)
- VDH Monkeypox [website](#)
  - [Assessing and Managing Exposed Healthcare Personnel](#)
- [DCLS Monkeypox testing and shipping instructions](#)
- NETEC [waste management](#)
- WHO Monkeypox [website](#)
- MMWR - [2003 Monkeypox outbreak](#)

# Thank You!